on state, the components are passed through the first panel **104** with the polarization plane being unchanged and are incident on the second polarizing filter **106**. Since the second polarizing filter **106** transmits only B color component among color components having the polarization plane in the horizontal direction, only B color component is passed through the filter **106** and incident on the second liquid crystal panel **108**. Here, the second liquid crystal panel **108** is in an off state. Therefore, the polarization plane of B color component is rotated by 90° to thereby provide B color component with the polarization plane in the vertical direction and B color component is incident on the third polarizing filter **110**. Since the third polarizing filter **110** transmits B color component having the polarization plane in the vertical direction, B color component is passed through the third polarizing filter **110**.

Likewise, if the first and second liquid crystal panels **104** and **108** are on and off states, G color component is passed through the third polarizing filter **110**. If the first and second liquid crystal panels **104** and **108** are both off state, R is passed through the third polarizing filter **110**.

As can be understood from the above-description, according to the second embodiment of the present invention, there is no need to color the phosphor member R, G and B, separately since the single color with high color purity can be obtained in high precision by changing the voltage applied to the color liquid crystal shutter in accordance with the image data. There is also no need to form a black matrix since the single color can be obtained with high contrast. Therefore, resolution can be determined only by the field emission array and the liquid crystal panels, and a flat panel display device with ultra high precision can be thereby provided. Such characteristics as low power consumption, high brightness and high contrast resulting from the light source unit **30** can be attained in the second embodiment, as well.

As in the case of the first embodiment, the second embodiment can be modified.

As described above, according to the image display device of the present invention, light generated based on quantum mechanic tunnel effect due to collision of electrons emitted from the cold cathodes against the phosphor member is used as the light source of the image display device. Namely, light is emitted not by generating plasma but due to collision of electrons directly against the phosphor member. This makes it possible to emit light with high efficiency. In addition, since electrons are sequentially emitted from the cold cathodes corresponding to pixels to be displayed, less power is consumed.

Further, the use of cold cathodes makes it possible to ensure quite large amount of electron beam current and to form a fine electron beam. As a result, desired point and region of the image can be illuminated bright, thereby enabling higher peak brightness and higher contrast.

Since it is not necessary to color the phosphor member in R, G and B as well as the size of the cold cathode is a micron order, the display device with very high precision can be provided.

Additional advantages and modifications will readily occur to those skilled in the art. Therefore, the present invention in its broader aspects is not limited to the specific details, representative devices, and illustrated examples shown and described herein. Accordingly, various modifications may be made without departing from the spirit or scope of the general inventive concept as defined by the appended claims and their equivalents.

I claim:

1. A flat panel display device comprising:

a light source having a plurality of light source elements, each of the light source elements comprising: a field emission type cold cathode; an anode electrode arranged facing said cold cathode; and a phosphor member formed on a surface of said anode electrode facing said cold cathode and emitting light due to electrons emitted from said cold cathode toward the anode electrode; and

a light modulator on which the light emitted from said light source is incident and which controls an amount of transmission of each light emitted from said phosphor member based on an image signal.

2. The display device according to claim **1**, in which

said phosphor member emits white light or light with one of three primary colors of display;

said light modulator comprises:

a first polarizer on which the light emitted from said light source is incident and which has a first linear polarization plane;

a light modulation layer on which the light emitted from said first polarizer is incident and which rotates a polarization plane of incident light by a predetermined angle in accordance with display data;

a color filter on which the light emitted from said light modulation layer is incident and which colors incident light one of three primary colors of display; and

a second polarizer on which the light emitted from said color filter is incident and which has a second linear polarization plane, said second linear polarization plane deviating from said first linear polarization plane by the predetermined angle.

3. The display device according to claim **1**, in which

said phosphor member emits light with one of three primary colors of display;

said light modulator comprises:

a first polarizer on which the light emitted from said light source is incident and which has a first linear polarization plane;

a light modulation layer on which the light emitted from said first polarizer is incident and which rotates a polarization plane of incident light in accordance with display data by a predetermined angle; and

a second polarizer on which the light emitted from said light modulation layer is incident and which has a second linear polarization plane, the second linear polarization plane deviating from said first linear polarization plane by the predetermined angle.

4. The display device according to claim **1**, in which

said phosphor member emits white light;

said light modulator comprises:

a first polarizing filter on which the light emitted from said light source is incident and which has one of a first linear polarization plane and a second linear polarization plane for all color components, the first linear polarization plane deviating from the second linear polarization plane by a predetermined angle;

a first light modulation layer on which the light emitted from said first polarizing filter is incident and which rotates a polarization plane of incident light by a predetermined angle in accordance with display data;